



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor : Uchenna N. Chukwu Appln. No. : 10/619,403 Filed : July 14, 2003 Title : Vegetable Processing Docket No. : C514.12-0004	Group Art Unit: 1761 Examiner: Corbin, Arthur L.
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EXHIBIT A  
of  
AMENDMENT

“NSRL: About Soy: Soybean Processing”  
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obtained from <http://www.nsrl.uiuc.edu/aboutsoy/soyprocesssing.html>

highlighting how soybean meal is prepared.

downloaded on September 23, 2007.

for post harvest disease.

The simplest cleaning method involves tossing the beans into the air and letting the wind carry off the lightest impurities. This cleaning method does not eliminate the heavier impurities. Cleaner-separator machines are used when large quantities of beans are cleaned. They are motor-driven and consist mainly of a reception hopper, a fan and set of vibrating sieves.



Cleaning is done by repeated suction of the lightest impurities, followed by siftings of the beans.

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### Packaging

Soybeans are generally packed in bags made of either jute, cotton fibers, or plastic. Bag packaging is seldom used in developed countries but it is widespread in developing countries because it is economical and well adapted to local grain-transport and marketing conditions. The type of bag determines the height of the stacks. Generally, the bags are stacked on wooden platforms called *pallets*, in order to prevent direct contact of bags with the floor. The free space between the top layer of the stacks and the top of the storehouse should be at least 1 meter. Sometimes, small-farmers keep small quantities of soybeans in sealed containers for self-consumption.

### Storage

Storage is an important phase of the post harvest system. During this phase, the soybeans are stored in a manner to be readily available and high quality. The main objectives of soybean storage are to permit deferred soybean use, to ensure seed availability for the next crop cycle, to guarantee regular and continuous supplies of raw soybeans for processing industries and to balance the supply and demand of soybean, thereby stabilizing its market price.

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### Processed Soybean Uses

Soybeans are grown primarily for meal, and oil is a secondary product. During processing, the soybeans are cracked to remove the hull and then rolled into full-fat flakes. The rolling process disrupts the oil cells, facilitating solvent extraction of the oil. After the oil has been extracted, the solvent is removed, and the flakes are dried, creating defatted soy flakes. While most of the defatted soy flakes are further processed into soybean meal for animal feeding, the flakes can be ground to produce soy flour, sized to produce soy grits or texturized to produce textured vegetable protein (TVP) for food uses. Further processing can produce high protein food ingredients such as soy protein concentrates and isolated soy protein. These ingredients have functional and nutritional applications in various types of bakery, dairy and meat products, infant formulas and the so-called new generation soy foods. Due to this difference in soybean use, two different types of soybeans have emerged: food beans and oil beans (Liu et al. 1995, Orthoefer and Liu 1995; Wilson, 1995).

[Soy Processing, Products and How They are Used](#)

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